Dell Precision™ M6400
Setup and Quick Reference Guide

This guide provides a features overview, specifications, and quick setup, software, and troubleshooting information for your computer. For more information about your operating system, devices, and technologies, see the *Dell Technology Guide* at support.dell.com.

Model PP08X

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model PP08X

August 2008 P/N D446C Rev. A01

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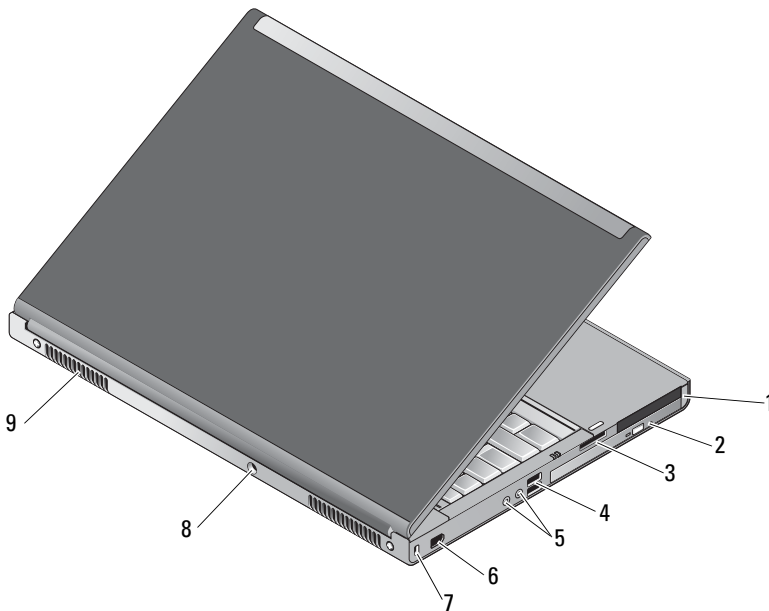
Back View

1	PC Card slot and Smart Card slot	2	optical bay
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7	security cable slot	8	AC adapter connector
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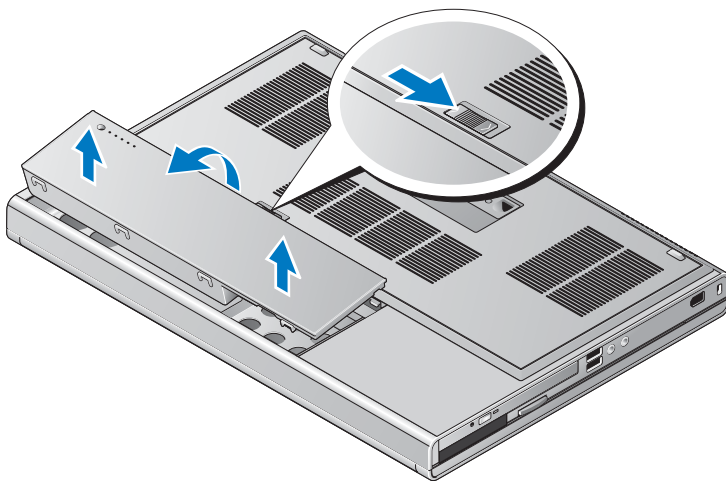
CAUTION: Do not block, push objects into, or allow dust to accumulate in the air vents. Do not store your Dell™ computer in a low-airflow environment, such as a closed briefcase, while it is running. Restricting the airflow can damage the computer or cause a fire.The computer turns on the fan when the computer gets hot. Fan noise is normal and does not indicate a problem with the fan or the computer.

Battery Removal

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions that shipped with your computer.

CAUTION: Using an incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell. The battery is designed to work with your Dell™ computer. Do not use a battery from other computers with your computer.

CAUTION: Before removing or replacing the battery, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and computer, and remove any other external cables from the computer.

1. Slide the battery release latch.
2. Use a plastic scribe to pry the battery up from the laptop.
3. Rotate one side of the battery up at an angle.
4. Remove the battery from the battery bay.

Wireless Switch and Dell™ Wi-Fi Catcher™ Network Locator

 wireless switch icon

 Dell Wi-Fi Catcher Network Locator icon

Use the wireless switch to enable or disable wireless network devices and the Wi-Fi Catcher Network Locator to locate networks. For information about connecting to the Internet, see "Connecting to the Internet" on page 14.

2

Setting Up Your Computer

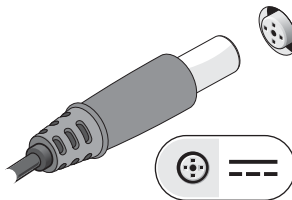
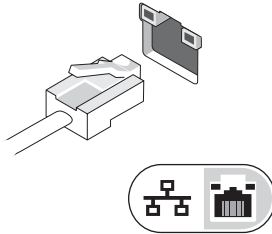
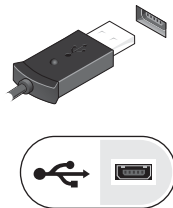
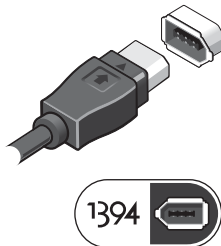
Quick Setup

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions that shipped with your computer.

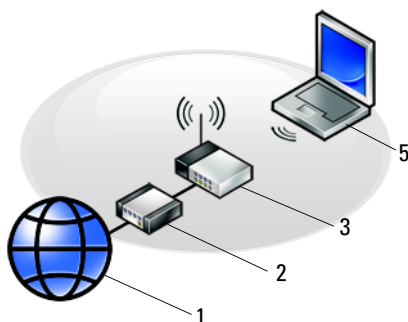
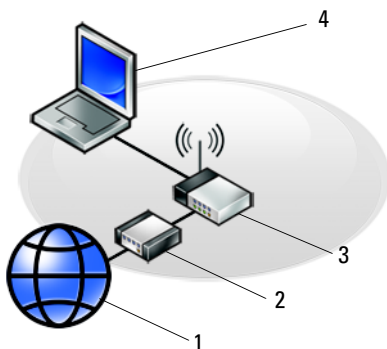
CAUTION: The AC adapter works with electrical outlets worldwide. However, power connectors and power strips vary among countries. Using an incompatible cable or improperly connecting the cable to the power strip or electrical outlet may cause fire or equipment damage.

NOTICE: When you disconnect the AC adapter cable from the computer, grasp the connector, not the cable itself, and pull firmly but gently to avoid damaging the cable. When you wrap the AC adapter cable, ensure that you follow the angle of the connector on the AC adapter to avoid damaging the cable.

NOTE: Some devices may not be included if you did not order them.

1 Connect the AC adapter to the AC adapter connector on the computer and to the electrical outlet.

2 Connect the network cable.

3 Connect USB devices, such as a mouse or keyboard.

4 Connect IEEE 1394 devices, such as a DVD player.

5 Open the computer display and press the power button to turn on the computer.

NOTE: It is recommended that you turn on and shut down your computer at least once before you install any cards or connect the computer to a docking device or other external device, such as a printer.

6 Connect to the Internet. See "Connecting to the Internet" on page 14 for more information.

1	Internet service	2	cable or DSL modem
3	wireless router	4	laptop with *wired* connection
5	laptop with *wireless* connection		

Connecting to the Internet

 NOTE: ISPs and ISP offerings vary by country.

To connect to the Internet, you need a modem or network connection and an Internet service provider (ISP). *If you are using a dial-up connection*, connect a telephone line to the modem connector on your computer and to the telephone wall connector before you set up your Internet connection. *If you are using a DSL or cable/satellite modem connection*, contact your ISP or cellular phone service for setup instructions.

Setting Up Your Internet Connection

To set up an Internet connection with a desktop shortcut provided by your ISP:

1. Save and close any open files, and exit any open programs.
2. Double-click the ISP icon on the Microsoft® Windows® desktop.
3. Follow the instructions on the screen to complete the setup.

If you do not have an ISP icon on your desktop or if you want to set up an Internet connection with a different ISP, perform the steps in the appropriate section below.

 NOTE: If you cannot connect to the Internet, see the *Dell Technology Guide*. If you have successfully connected in the past, the ISP might have a service outage. Contact your ISP to check the service status, or try connecting again later.

 NOTE: Have your ISP information ready. If you do not have an ISP, consult the **Connect to the Internet** wizard.

1. Save and close any open files, and exit any open programs.
2. Click the Windows Vista Start button → **Control Panel**
3. Under **Network and Internet,** click **Connect to the Internet**.
4. In the **Connect to the Internet** window, click either **Broadband (PPPoE)** or **Dial-up**, depending on how you want to connect:
   - Choose **Broadband** if you will use a DSL, satellite modem, cable TV modem, or Bluetooth wireless technology connection.
   - Chose **Dial-up** if you will use a dial-up modem or ISDN.

 NOTE: If you do not know which type of connection to select, click **Help me choose** or contact your ISP.

5 Follow the instructions on the screen and use the setup information provided by your ISP to complete the setup.

Transferring Information to a New Computer

Microsoft® Windows Vista® Operating System

1 Click the Windows Vista Start button , and then click **Transfer files and settings→ Start Windows Easy Transfer.**

2 In the **User Account Control** dialog box, click **Continue**.

3 Click **Start a new transfer** or **Continue a transfer in progress**.

4 Follow the instructions provided on the screen by the Windows Easy Transfer wizard.

Microsoft Windows® XP

Windows XP provides the Files and Settings Transfer Wizard to move data from a source computer to a new computer.

You can transfer the data to the new computer over a network or serial connection, or you can store it on removable media, such as a writable CD, for transfer to the new computer.

NOTE: You can transfer information from an old computer to a new computer by directly connecting a serial cable to the input/output (I/O) ports of the two computers.
For instructions on setting up a direct cable connection between two computers, see Microsoft Knowledge Base Article #305621, titled *How to Set Up a Direct Cable Connection Between Two Computers in Windows XP*. This information may not be available in certain countries.

For transferring information to a new computer, you must run the Files and Settings Transfer Wizard.

Running the Files and Settings Transfer Wizard With the Operating System Media

NOTE: This procedure requires the *Operating System* media. This media is optional and may not be included with certain computers.

To prepare a new computer for the file transfer:

1. Open the Files and Settings Transfer Wizard: click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **Files and Settings Transfer Wizard**.
2. When the **Files and Settings Transfer Wizard** welcome screen appears, click **Next**.
3. On the **Which computer is this?** screen, click **New Computer**→ **Next**.
4. On the **Do you have a Windows XP CD?** screen, click **I will use the wizard from the Windows XP CD**→ **Next**.
5. When the **Now go to your old computer** screen appears, go to your old or source computer. Do *not* click **Next** at this time.

To copy data from the old computer:

1. On the old computer, insert the Windows XP *Operating System* media.
2. On the **Welcome to Microsoft Windows XP** screen, click **Perform additional tasks**.
3. Under **What do you want to do?**, click **Transfer files and settings**→ **Next**.
4. On the **Which computer is this?** screen, click **Old Computer**→ **Next**.
5. On the **Select a transfer method** screen, click the transfer method you prefer.
6. On the **What do you want to transfer?** screen, select the items you want to transfer and click **Next**.

   After the information has been copied, the **Completing the Collection Phase** screen appears.

7. Click **Finish**.

To transfer data to the new computer:

1. On the **Now go to your old computer** screen on the new computer, click **Next**.
2. On the **Where are the files and settings?** screen, select the method you chose for transferring your settings and files and click **Next**.

   The wizard applies the collected files and settings to your new computer.

3. On the **Finished** screen, click **Finished**, and restart the new computer.

Running the Files and Settings Transfer Wizard Without the Operating System Media

To run the Files and Settings Transfer Wizard without the *Operating System* media, you must create a wizard disk that will allow you to create a backup image file to removable media.

To create a wizard disk, use your new computer with Windows XP and perform the following steps:

1. Open the Files and Settings Transfer Wizard: click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **Files and Settings Transfer Wizard**.
2. When the **Files and Settings Transfer Wizard** welcome screen appears, click **Next**.
3. On the **Which computer is this?** screen, click **New Computer**→ **Next**.
4. On the **Do you have a Windows XP CD?** screen, click **I want to create a Wizard Disk in the following drive**→ **Next.**
5. Insert the removable media, such as a writable CD, and click **OK**.
6. When the disk creation completes and the `Now go to your old computer` message appears, *do not* click **Next**.
7. Go to the old computer.

To copy data from the old computer:

1. On the old computer, insert the wizard disk, and click **Start**→ **Run**.
2. In the **Open** field on the **Run** window, browse to the path for **fastwiz** (on the appropriate removable media) and click **OK**.
3. On the **Files and Settings Transfer Wizard** welcome screen, click **Next**.
4. On the **Which computer is this?** screen, click **Old Computer**→ **Next**.
5. On the **Select a transfer method** screen, click the transfer method you prefer.
6. On the **What do you want to transfer?** screen, select the items you want to transfer and click **Next**.

   After the information has been copied, the **Completing the Collection Phase** screen appears.

7. Click **Finish**.

To transfer data to the new computer:

1. On the **Now go to your old computer** screen on the new computer, click **Next**.
2. On the **Where are the files and settings?** screen, select the method you chose for transferring your settings and files and click **Next**. Follow the instructions on the screen.

   The wizard reads the collected files and settings and applies them to your new computer.

   When all of the settings and files have been applied, the **Finished** screen appears.
3. Click **Finished** and restart the new computer.

NOTE: For more information about this procedure, search **support.dell.com** for document #154781 (*What Are The Different Methods To Transfer Files From My Old Computer To My New Dell™ Computer Using the Microsoft® Windows® XP Operating System?*).

NOTE: Access to the Dell™ Knowledge Base document may not be available in certain countries.

3

Specifications

NOTE: Offerings may vary by region. For more information regarding the configuration of your computer, click **Start**→ **Help and Support** and select the option to view information about your computer.

Processor	
Processor types	Intel® Core™ 2 Duo Intel Core 2 Duo Extreme Edition Intel Core 2 Duo Quad Core Intel Core 2 Duo Extreme Edition Quad Core
L1 cache	32 KB instruction, 32 KB data cache per core
L2 cache	Shared 3 MB, 6 MB, and 12 MB
External bus frequency	1066 MHz

System Information	
Chipset	Intel Q43 GMCH, ICH9M-E
Data bus width	64 bits
DRAM bus width	dual-channel (2) 64-bit busses
Processor address bus width	36 bits
Flash EPROM	SPI 32 Mbit
Graphics bus	x16 PCI Express
PCI bus	32 bits, 33MHz

PC Card	
NOTE: The PC Card slot is designed only for PC Cards. It does NOT support ExpressCards.	
CardBus controller	Ricoh R5C847
PC Card connector	one (supports one Type I or Type II card)
Cards supported	3.3 V and 5 V
PC Card connector size	80 pins

ExpressCard	
NOTE: The ExpressCard slot is designed only for ExpressCards. It does NOT support PC Cards.	
ExpressCard connector	ExpressCard slot (USB and PCI Express-based interfaces)
Cards supported	34-mm and 54-mm ExpressCards

Memory	
Memory module connector	four user-accessible SODIMM sockets
Memory module capacities	1 GB, 2 GB, 4 GB capable
Memory type	DDR3 1066 MHz
Minimum memory	1 GB
Maximum memory	16 GB

NOTE: The following maximum memory configurations are supported: 1 GB, 2 GB, 3 GB, 4 GB, 8 GB, 12 GB, 16 GB.

NOTE: When upgrading or replacing memory modules, the modules must be paired and matched in slots B and C, and in slots A and D. Otherwise, the computer does not boot.

Smart Card	
Read/write capabilities	Supports ISO-7816-3 (asynchronous and synchronous Type I and II), ISO7816-12
Cards supported	1.8 V, 3 V, 5 V
Program technology supported	Java cards

Smart Card ***(continued)***	
Interface speed	9600–115,200 BPS
EMV level	level 1 certified
WHQL certification	PC/SC

Ports and Connectors	
Audio	microphone connector, stereo headphone/speakers connector
Mini-Card	one dedicated half Mini-Card slot for WLAN
	one dedicated full Mini-Card slot for WWAN (Mobile Broadband)
	one dedicated full Mini-Card slot for WPAN (Bluetooth® or ultra wideband [UWB])
Network adapter	RJ-45 port
USB	two 4-pin USB 2.0-compliant connectors, one 4-pin USB 2.0-compliant PowerShare connector, one eSATA/USB 2.0-compliant connector
Memory card reader	8-in-1 memory card reader supporting: SD, SDIO, MMC, XD, MS, MS-Pro, Mini-MMC, MMC+, Hi-density SD, Hi-capacity SD card types
CardBus/PCIMIA slot	Supports Type I/II cards
Video	15-hole connector
IEEE 1394	powered 6-pin
E-family docking connector	144-pin docking connector

Communications	
Network adapter	10/100/1000 Ethernet LAN
Wireless	internal WLAN, WWAN, and WPAN (UWB and Bluetooth) wireless support if optional cards are purchased

Video	
Video type:	Discrete
Data bus	PCI-Express video x16
Video controller	nVIDIA Quadro FX 3700M or NVIDIA Quadro FX 2700M
Video memory	512MB for NVIDIA Quadro FX 2700M or 1GB for nVIDIA Quadro FX 3700M
Video output	15-pin video connector and dual-mode DisplayPort connector

Audio	
Audio type	two-channel High Definition Audio
Audio controller	IDT 92HD71B
Stereo conversion	24-bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	High Definition Audio Codec
External	microphone-in connector, stereo headphones/external speakers connector
Speakers	2x2 W, 4 W total
Internal speaker amplifier	Class AB 2 W Stereo BTL Speaker Amplifier
Volume controls	volume up, down, and mute buttons

Display	
Type (active matrix TFT)	17 inch, WXGA+ LCD, 17 inch, WUXGA, LCD or RGB LED, RGB LED Edge 2-edge glass
Active area (X/Y)	367.3 X 229.5 mm

Display *(continued)*	
Dimensions:	
Height:	
WXGA+/WUXGA (CCFL)	245mm (9.64 inches)
WUXGA (LED)	248mm (9.76 inches)
Width (WXGA+/WUXGA)	383mm (15.08 inches)
Diagonal	432mm (17.0 inches)
Maximum resolutions:	
WXGA+ (CCFL)	1440 x 900 at 262 K colors
WUXGA (CCFL)	1930 x 1200 at 262 K colors
WUXGA (LED)	1930 x 1200 at 16.7 M colors
Operating angle	0° (closed) to 152°
Refresh rate	60 Hz
Viewing angles:	
WXGA+ Horizontal	40/40
WXGA+ Vertical	15/30
WUXGA Horizontal	60/60
WUXGA Vertical	45/45
Pixel pitch:	
WXGA+	0.191 mm
WUXGA	0.225 mm
Typical power consumption (panel with backlight):	
WXGA+ (CCFL)	6.46 W (maximum with no inverter losses)
WUXGA (CCFL)	9.5 W (maximum with no inverter losses)
WUXGA (LED)	15 W (maximum)

Keyboard	
Number of keys	in United States: 101 keys
	in United Kingdom: 102 keys
	in Brazil: 104 keys
	in Japan: 105 keys
Layout	QWERTY/AZERTY/Kanji

Touch Pad	
Resolution:	
X Axis	57.52 units per mm
Y Axis	78.12 units per mm
Active Area	
X Axis	80.0 mm
Y Axis	47.11 mm

Battery	
Type	9-cell smart lithium ion (85 WHr)
Charge time with computer off	approximately 1 hour to 80% capacity
Operating time	Battery operating time varies depending on operating conditions and can be significantly reduced under certain power-intensive conditions.
Life span	approximately 300 charge/discharge cycles
Temperature range:	
Operating	0° to 35°C (32° to 95°F)
Storage	–40° to 60°C (–40° to 140°F)
Coin-cell battery	CR-2032

AC Adapter	
Input voltage	100–240 VAC
Input current (maximum)	2.5 A/3.5 A
Input frequency	50–60 Hz
Output current	6.7 A/ 10.8 A
Output power	130 W/ 210 W or higher
Output voltage	19.5 VDC
Dimensions:	
Height	100 mm (3.94 in)
Width	44 mm (1.73 in)
Depth	198 mm (7.95 in)
Temperature range:	
Operating	0° to 35°C (32° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)

Fingerprint Reader (Optional)	
Types	Swipe fingerprint sensor FIPS 140-2 / FIPS 201

Physical	
Height	38.5 mm (1.52 inches) back
Width	393 mm (15.5 inches)
Depth	280.5 mm (11.04 inches)
Weight (with 9-cell battery and CD drive)	3.87 kg (8.54 lbs)

Environmental	
Temperature range:	
Operating	0° to 35°C (32° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity (maximum):	
Operating	10% to 90% (noncondensing)
Storage	5% to 95% (noncondensing)
Maximum vibration (using a random-vibration spectrum that simulates user environment):	
Operating	0.66 Grms (2-600 Hz)
Storage	1.30 Grms (2-600 Hz)
Maximum shock (measured with hard drive in head-parked position and a 2-ms half-sine pulse):	
Operating	142 G (2ms)
Storage	162 G (2ms)
Altitude (maximum):	
Operating	–15.2 to 3048 m (–50 to 10,000 ft)
Storage	–15.2 to 10,668 m (–50 to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ANSI/ISA-S71.04-1985

4

Troubleshooting Tips

CAUTION: Always unplug your computer from the electrical outlet before opening the cover.

NOTE: For detailed troubleshooting information, including responding to system messages, see your *Service Manual* on **support.dell.com**.

Using the Hardware Troubleshooter

1. Click the Windows Vista Start button, and click **Help and Support.**
2. Type `hardware troubleshooter` in the search field and press <Enter> to start the search.
3. In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.

Tips

- If a device does not work, ensure that the device is properly connected.
- If you added or removed a part before the problem started, review the installation procedures and ensure that the part is correctly installed.
- If an error message appears on the screen, write down the exact message. This message may help support personnel to diagnose and fix the problem(s).
- If an error message occurs in a program, see the program documentation.

Power Problems

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see www.dell.com/regulatory_compliance.

IF THE POWER LIGHT IS OFF — The computer is either turned off or is not receiving power.

- Reseat the power cable in the power connector on the back of the computer and the electrical outlet.

- Bypass power strips, power extension cables, and other power protection devices to verify that the computer turns on properly.
- Ensure that any power strips being used are plugged into an electrical outlet and are turned on.
- Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
- Ensure that the main power cable and front panel cable are securely connected to the system board.

IF THE POWER LIGHT IS BLUE AND THE COMPUTER IS NOT RESPONDING —

- Ensure that the display is connected and powered on.
- If the display is connected and powered on, see in your *Service Manual* on **support.dell.com**.

IF THE POWER LIGHT IS BLINKING BLUE — The computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

IF THE POWER LIGHT IS BLINKING AMBER — The computer is receiving electrical power, a device might be malfunctioning or incorrectly installed.

- Remove and then reinstall all memory modules.
- Remove and then reinstall any expansion cards, including graphics cards.

IF THE POWER LIGHT IS STEADY AMBER — There is a power problem, a device may be malfunctioning or incorrectly installed.

- Ensure that the processor power cable is securely connected to the system board power connector (see your *Service Manual* at **support.dell.com**).
- Ensure that the main power cable and the front panel cable are securely connected to the system board connector.

ELIMINATE INTERFERENCE — Some possible causes of interference are:

- Power, keyboard, and mouse extension cables
- Too many devices connected to the same power strip
- Multiple power strips connected to the same electrical outlet

Memory Problems

CAUTION: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see www.dell.com/regulatory_compliance.

IF YOU RECEIVE AN INSUFFICIENT MEMORY MESSAGE —

- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
- See the software documentation for minimum memory requirements. If necessary, install additional memory.
- Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 31).

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS —

- Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
- Ensure that you are following the memory installation guidelines.
- Ensure that the memory you are using is supported by your computer. For more information about the type of memory supported by your computer, see "Specifications" on page 19.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 31).

Lockups and Software Problems

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell computer to the Windows Classic view.

The computer does not start up

ENSURE THAT THE POWER CABLE IS FIRMLY CONNECTED TO THE COMPUTER AND TO THE ELECTRICAL OUTLET

A program stops responding

END THE PROGRAM —

1 Press <Ctrl><Shift><Esc> simultaneously to access the Task Manager, and click the **Applications** tab.

2 Click to select the program that is no longer responding, and click **End Task**.

A program crashes repeatedly

NOTE: Most software includes installation instructions in its documentation or on a floppy disk, CD, or DVD.

CHECK THE SOFTWARE DOCUMENTATION — If necessary, uninstall and then reinstall the program.

A program is designed for an earlier Microsoft® Windows® operating system

RUN THE PROGRAM COMPATIBILITY WIZARD —

1 Click **Start** → **Control Panel**→ **Programs**→ **Use an older program with this version of Windows.**

2 In the welcome screen, click **Next**.

3 Follow the instructions on the screen.

A solid blue screen appears

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 6 seconds (until the computer turns off), and then restart your computer.

Other software problems

CHECK THE SOFTWARE DOCUMENTATION OR CONTACT THE SOFTWARE MANUFACTURER FOR TROUBLESHOOTING INFORMATION —

- Ensure that the program is compatible with the operating system installed on your computer.

- Ensure that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.
- Ensure that the program is installed and configured properly.
- Verify that the device drivers do not conflict with the program.
- If necessary, uninstall and then reinstall the program.

Dell Technical Update Service

The Dell Technical Update service provides proactive e-mail notification of software and hardware updates for your computer. To enroll for the Dell Technical Update service, go to **support.dell.com/technicalupdate**.

Dell Support Utility

The Dell Support Utility provides self-support information, software updates, and health scans of your computing environment. Access the Dell Support Utility from the icon on the taskbar, or from the **Start** menu.

If the Dell Support icon does not appear in your taskbar:

1 Click **Start→ All Programs→ Dell Support→ Dell Support Settings**.

2 Ensure that the **Show icon on the taskbar** option is checked.

NOTE: If the Dell Support Utility is not available from the **Start** menu, go to **support.dell.com** and download the software.

For more information about the Dell Support Utility, click the question mark (?) at the top of the **Dell™ Support** screen.

Dell Diagnostics

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions that shipped with your computer.

Starting the Dell Diagnostics From Your Hard Drive

1 Ensure that the computer is connected to a working electrical outlet.

2 Turn on (or restart) your computer.

3 When the DELL™ logo appears, press <F12> immediately. Select **Diagnostics** from the start menu and press <Enter>.

NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop, and then shut down your computer and try again.

NOTE: If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from the *Drivers and Utilities* media.

4 Press any key to start the Dell Diagnostics from the diagnostics utility partition on your hard drive, and follow the instructions on the screen.

Starting the Dell Diagnostics From the Dell *Drivers and Utilities* Media

NOTE: The Dell *Drivers and Utilities* media is optional and may not ship with your computer.

1 Insert the *Drivers and Utilities* media.

2 Shut down and restart the computer.

When the DELL logo appears, press <F12> immediately.

NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

NOTE: The next steps change the boot sequence for one time only. On the next start-up, the computer starts according to the devices specified in the system setup program.

3 When the boot device list appears, highlight **CD/DVD/CD-RW** and press <Enter>.

4 Select the **Boot from CD-ROM** option from the menu that appears and press <Enter>.

5 Type `1` to start the CD menu and press <Enter> to proceed.

6 Select **Run the 32 Bit Dell Diagnostics** from the numbered list. If multiple versions are listed, select the version that is appropriate for your computer.

7 When the Dell Diagnostics **Main Menu** appears, select the test that you want to run, and follow the instructions on the screen

5

Reinstalling Software

Drivers

Identifying Drivers

If you experience a problem with any device, identify whether the driver is the source of your problem and, if necessary, update the driver.

Windows XP:

1. Click **Start**→ **Control Panel**.
2. Under **Pick a Category**, click **Performance and Maintenance**, and click **System**.
3. In the **System Properties** window, click the **Hardware** tab, and click **Device Manager**.

Windows Vista:

1. Click the Windows Vista Start button™ , and right-click **Computer**.
2. Click **Properties**→ **Device Manager**.

NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue.

Scroll down the list to see if any device has an exclamation point (a yellow circle with a [**!**]) on the device icon.

If an exclamation point is next to the device name, you may need to reinstall the driver or install a new driver (see "Reinstalling Drivers and Utilities" on page 34).

Reinstalling Drivers and Utilities

NOTICE: The Dell Support website at **support.dell.com** and your *Drivers and Utilities* media provide approved drivers for Dell™ computers. If you install drivers obtained from other sources, your computer might not work correctly.

Returning to a Previous Device Driver Version

Windows XP:

1. Click **Start**→ **My Computer**→ **Properties**→ **Hardware**→ **Device Manager**.
2. Right-click the device for which the new driver was installed and click **Properties**.
3. Click the **Drivers** tab→ **Roll Back Driver.**

Windows Vista:

1. Click the Windows Vista Start button , and right-click **Computer**.
2. Click **Properties**→ **Device Manager**.

NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3. Right-click the device for which the new driver was installed and click **Properties**.
4. Click the **Drivers** tab→ **Roll Back Driver**.

If Device Driver Rollback does not resolve the problem, then use System Restore (see "Restoring Your Operating System" on page 36) to return your computer to the operating state that existed before you installed the new driver.

Using the Drivers and Utilities Media

If using Device Driver Rollback or System Restore (see "Restoring Your Operating System" on page 36) does not resolve the problem, reinstall the driver from your *Drivers and Utilities* media.

1. With the Windows desktop displayed, insert your *Drivers and Utilities* media.

   If this is your first time to use the *Drivers and Utilities* media, go to step 2. If not, go to step 5.

2 When the *Drivers and Utilities* media installation program starts, follow the prompts on the screen.

 NOTE: In most cases, the *Drivers and Utilities* program starts running automatically. If it does not, start Windows Explorer, click your media drive directory to display the media contents, and then double-click the **autorcd.exe** file.

3 When the **InstallShield Wizard Complete** window appears, remove the *Drivers and Utilities* media and click **Finish** to restart the computer.

4 When you see the Windows desktop, reinsert the *Drivers and Utilities* media.

5 At the **Welcome Dell System Owner** screen, click **Next**.

 NOTE: The *Drivers and Utilities* program displays drivers only for hardware that came installed in your computer. If you installed additional hardware, the drivers for the new hardware might not be displayed. If those drivers are not displayed, exit the *Drivers and Utilities* program. For drivers information, see the documentation that came with the device.

A message stating that the Resource media is detecting hardware in your computer appears.

The drivers that are used by your computer are automatically displayed in the **My Drivers—The ResourceCD has identified these components in your system** window.

6 Click the driver that you want to reinstall and follow the instructions on the screen.

If a particular driver is not listed, then that driver is not required by your operating system.

Manually Reinstalling Drivers

After extracting the driver files to your hard drive as described in the previous section:

1 Click the Windows Vista Start button , and right-click **Computer**.

2 Click **Properties**→ **Device Manager**.

 NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3. Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).
4. Double-click the name of the device for which you are installing the driver.
5. Click the **Driver** tab→ **Update Driver**→ **Browse my computer for driver software**.
6. Click **Browse** and browse to the location to which you previously copied the driver files.
7. When the name of the appropriate driver appears, click the name of the driver→ **OK**→ **Next**.
8. Click **Finish** and restart your computer.

Restoring Your Operating System

You can restore your operating system in the following ways:

- Microsoft Windows System Restore returns your computer to an earlier operating state without affecting data files. Use System Restore as the first solution for restoring your operating system and preserving data files.
- Dell Factory Image Restore (available in Windows Vista) returns your hard drive to the operating state it was in when you purchased the computer. Both permanently delete all data on the hard drive and remove any programs installed after you received the computer. Use Dell Factory Image Restore only if System Restore did not resolve your operating system problem.
- If you received a Dell *Operating System* media with your computer, you can use it to restore your operating system. However, using the *Operating System* media also deletes all data on the hard drive. Use the disc *only* if System Restore did not resolve your operating system problem.

Using Microsoft® Windows® System Restore

The Windows operating systems provide a System Restore option that allows you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. Any changes that System Restore makes to your computer are completely reversible.

NOTICE: Make regular backups of your data files. System Restore does not monitor your data files or recover them.

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your computer to the Windows Classic view.

Starting System Restore

Windows XP:

NOTICE: Before you restore the computer to an earlier operating state, save and close any open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

1. Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.
2. Click either **Restore my computer to an earlier time** or **Create a restore point**.
3. Click **Next** and follow the remaining on-screen prompts.

Windows Vista:

1. Click **Start** .
2. In the Start Search box, type `System Restore` and press <Enter>.

   NOTE: The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue the desired action.

3. Click **Next** and follow the remaining prompts on the screen.

In the event that System Restore did not resolve the issue, you may undo the last system restore. See "Undoing the Last System Restore" on page 37.

Undoing the Last System Restore

NOTICE: Before you undo the last system restore, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

Windows XP:

1. Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.
2. Click **Undo my last restoration** and click **Next**.

Windows Vista:

1 Click **Start** .
2 In the Start Search box, type `System Restore` and press <Enter>.
3 Click **Undo my last restoration** and click **Next**.

Enabling System Restore

 NOTE: Windows Vista does not disable System Restore; regardless of low disk space. Therefore, the steps below apply only to Windows XP.

If you reinstall Windows XP with less than 200 MB of free hard-disk space available, System Restore is automatically disabled.

To see if System Restore is enabled:

1 Click **Start**→ **Control Panel**→ **Performance and Maintenance**→ **System**.
2 Click the **System Restore** tab and ensure that **Turn off System Restore** is unchecked.

Using Dell Factory Image Restore

NOTICE: Using Dell Factory Image Restore permanently deletes all data on the hard drive and removes any programs or drivers installed after you received your computer. If possible, back up the data before using these options. Use Dell Factory Image Restore only if System Restore did not resolve your operating system problem.

 NOTE: Dell Factory Image Restore may not be available in certain countries or on certain computers.

Use Dell Factory Image Restore (Windows Vista) only as the last method to restore your operating system. This option restore your hard drive to the operating state it was in when you purchased the computer. Any programs or files added since you received your computer—including data files—are permanently deleted from the hard drive. Data files include documents, spreadsheets, e-mail messages, digital photos, music files, and so on. If possible, back up all data before using Dell Factory Image Restore.

Dell Factory Image Restore

1 Turn on the computer. When the Dell logo appears, press <F8> several times to access the **Vista Advanced Boot Options** window.
2 Select **Repair Your Computer**.

3 In the System Recovery Options window, select a keyboard layout and click **Next**.

4 To access the recovery options, log on as a local user. To access the command prompt, type `administrator` in the user name field, then click **OK**.

5 Click **Dell Factory Image Restore**.

NOTE: Depending upon your configuration, you may need to select **Dell Factory Tools**, then **Dell Factory Image Restore**.

The **Dell Factory Image Restore** welcome screen appears.

6 On the Dell Factory Restore Image welcome screen, click **Next.**

The **Confirm Data Deletion** screen appears.

NOTICE: If you do not want to proceed with Factory Image Restore, click **Cancel**.

7 Click the checkbox to confirm that you want to continue reformatting the hard drive and restoring the system software to the factory condition, then click **Next**.

The restore process begins and may take 5 or more minutes to complete.

8 Click **Finish** to restart the computer.

Using the Dell™ Operating System Media

Before you Begin

If you are considering reinstalling the Windows operating system to correct a problem with a newly installed driver, first try using Windows Device Driver Rollback. See "Returning to a Previous Device Driver Version" on page 34. If Device Driver Rollback does not resolve the problem, then use Microsoft Windows System Restore to return your operating system to the operating state it was in before you installed the new device driver. See "Using Microsoft® Windows® System Restore" on page 36.

NOTICE: Before performing the installation, back up all data files on your primary hard drive. For conventional hard drive configurations, the primary hard drive is the first drive detected by the computer.

To reinstall Windows, you need the Dell™ *Operating System* media and the Dell *Drivers and Utilities* media.

NOTE: The Dell *Drivers and Utilities* media contains drivers that were installed during the assembly of the computer. Use the Dell *Drivers and Utilities* media to load any required drivers. Depending on the region from which you ordered your computer, or whether you requested the media, the Dell *Drivers and Utilities* media and Dell *Operating System* media may not ship with your computer.

Reinstalling Windows

The reinstallation process can take one to two hours to complete. After you reinstall the operating system, you must also reinstall the device drivers, virus protection program, and other software.

1. Save and close any open files and exit any open programs.
2. Insert the *Operating System* media.
3. If the `Install Windows` message appears, click **Exit**.
4. Restart the computer.

   When the DELL logo appears, press <F12> immediately.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

   NOTE: The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

5. When the boot device list appears, highlight **CD/DVD/CD-RW Drive** and press <Enter>.
6. Press any key to **Boot from CD-ROM**, and follow the instructions on the screen to complete the installation.

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Finding Information

NOTE: Some features or media may be optional and may not ship with your computer. Some features or media may not be available in certain countries.

NOTE: Additional information may ship with your computer.

Document/Media/Label	Contents
Service Tag/Express Service Code The Service Tag/Express Service Code is located on your computer.	• Use the Service Tag to identify your computer when you use **support.dell.com** or contact support. • Enter the Express Service Code to direct your call when contacting support **NOTE:** Your Service Tag/Express Service Code is located on your computer.
Drivers and Utilities Media The *Drivers and Utilities* media is a CD or DVD that may have shipped with your computer.	• A diagnostic program for your computer • Drivers for your computer **NOTE:** Drivers and documentation updates can be found at **support.dell.com**.
Operating System Media The *Operating System* media is a CD or DVD that may have shipped with your computer.	Reinstall your operating system
Safety, Regulatory, Warranty, and Support Documentation This type of information may have shipped with your computer. For additional regulatory information, see the Regulatory Compliance Homepage on **www.dell.com** at the following location: **www.dell.com/regulatory_compliance.**	• Warranty information • Terms and Conditions (U.S. only) • Safety instructions • Regulatory information • Ergonomics information • End User License Agreement

Document/Media/Label	Contents
Service Manual The *Service Manual* for your computer can be found at **support.dell.com**.	• How to remove and replace parts • How to configure system settings • How to troubleshoot and solve problems
Dell Technology Guide The *Dell Technology Guide* is available at **support.dell.com.**	• About your operating system • Using and maintaining devices • Understanding technologies such as RAID, Internet, Bluetooth® wireless technology, e-mail, networking, and more.
Microsoft® Windows® License Label Your Microsoft Windows License is located on your computer.	• Provides your operating system product key.

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Getting Help

Obtaining Assistance

CAUTION: If you need to remove the computer cover, first disconnect the computer power and modem cables from all electrical outlets. Follow the safety instructions that shipped with your computer.

If you experience a problem with your computer, you can complete the following steps to diagnose and troubleshoot the problem:

1. See "Tips" on page 27 for information and procedures that pertain to the problem your computer is experiencing.
2. See "Dell Diagnostics" on page 31 for procedures on how to run Dell Diagnostics.
3. Fill out the "Diagnostics Checklist" on page 48.
4. Use Dell's extensive suite of online services available at Dell Support (**support.dell.com**) for help with installation and troubleshooting procedures. See "Online Services" on page 44 for a more extensive list of Dell Support online.
5. If the preceding steps have not resolved the problem, see "Contacting Dell" on page 49.

NOTE: Call Dell Support from a telephone at or near the affected computer so that the support staff can assist you with any necessary procedures.

NOTE: Dell's Express Service Code system may not be available in all countries.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

For instructions on using the Dell Support, see "Technical Support and Customer Service" on page 44.

NOTE: Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

Technical Support and Customer Service

Dell's support service is available to answer your questions about Dell™ hardware. Our support staff uses computer-based diagnostics to provide fast, accurate answers.

To contact Dell's support service, see "Before You Call" on page 47, and then see the contact information for your region or go to **support.dell.com**.

DellConnect™

DellConnect is a simple online access tool that allows a Dell service and support associate to access your computer through a broadband connection, diagnose your problem and repair it all under your supervision. For more information, go to **support.dell.com** and click **DellConnect**.

Online Services

You can learn about Dell products and services at the following websites:

www.dell.com

www.dell.com/ap (Asian/Pacific countries only)

www.dell.com/jp (Japan only)

www.euro.dell.com (Europe only)

www.dell.com/la (Latin American and Caribbean countries)

www.dell.ca (Canada only)

You can access Dell Support through the following websites and e-mail addresses:

- Dell Support websites:

  support.dell.com

  support.jp.dell.com (Japan only)

  support.euro.dell.com (Europe only)

- Dell Support e-mail addresses:

  mobile_support@us.dell.com

  support@us.dell.com

  la-techsupport@dell.com (Latin America and Caribbean countries only)

  apsupport@dell.com (Asian/Pacific countries only)

- Dell Marketing and Sales e-mail addresses:

  apmarketing@dell.com (Asian/Pacific countries only)

  sales_canada@dell.com (Canada only)

- Anonymous file transfer protocol (FTP):

  ftp.dell.com – log in as user `anonymous`, and use your e-mail address as your password

AutoTech Service

Dell's automated support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their laptop and desktop computers.

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions. For the telephone number to call for your region, see "Contacting Dell" on page 49.

Automated Order-Status Service

To check on the status of any Dell products that you have ordered, you can go to **support.dell.com**, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call for your region, see "Contacting Dell" on page 49.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip available when you call. For the telephone number to call for your region, see "Contacting Dell" on page 49.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at **www.dell.com**. For the telephone number to call for your region or to speak to a sales specialist, see "Contacting Dell" on page 49.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

   For the telephone number to call for your region, see "Contacting Dell" on page 49. Include a copy of the invoice and a letter describing the reason for the return.

2. Include a copy of the Diagnostics Checklist (see "Diagnostics Checklist" on page 48), indicating the tests that you have run and any error messages reported by the Dell Diagnostics (see "Contacting Dell" on page 49).
3. Include any accessories that belong with the item(s) being returned (power cables, software floppy disks, guides, and so on) if the return is for credit.
4. Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at Dell’s receiving dock and returned to you.

Before You Call

NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently. You may also be asked for your Service Tag (located on the back or bottom of your computer).

Remember to fill out the Diagnostics Checklist (see "Diagnostics Checklist" on page 48). If possible, turn on your computer before you call Dell for assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer itself. Ensure that the computer documentation is available.

CAUTION: Before working inside your computer, follow the safety instructions in the documentation that shipped with your computer.

Diagnostics Checklist

Name:

Date:

Address:

Phone number:

Service Tag (bar code on the back or bottom of the computer):

Express Service Code:

Return Material Authorization Number (if provided by Dell support technician):

Operating system and version:

Devices:

Expansion cards:

Are you connected to a network? Yes No

Network, version, and network adapter:

Programs and versions:

See your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.

Error message, beep code, or diagnostic code:

Description of problem and troubleshooting procedures you performed:

Contacting Dell

For customers in the United States, call 800-WWW-DELL (800-999-3355).

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit **support.dell.com**, and verify your country or region in the **Choose A Country/Region** drop-down menu at the bottom of the page.
2. Click **Contact Us** on the left side of the page, and select the appropriate service or support link based on your need.
3. Choose the method of contacting Dell that is convenient for you.

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